REMARKS

Claims 1-13 are pending in the application. In the Office Action at hand, Claims 1-12 are rejected, and Claim 13 is withdrawn from consideration.

With regard to the objection of Claim 9 as being a substantial duplicate of Claim 4, the Applicants respectfully submit that base Claim 8 recites a "retaining ring" which is not recited in Claim 4 or its base Claim 1. Therefore, Claim 9 is not a duplicate of Claim 4. Reconsideration is respectfully requested.

Claims 1-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Stevens. In addition, Claims 1-12 are rejected under Section 103(a) as being unpatentable over Stevens in view of Shinmoto. Furthermore, Claims 1-12 are rejected under Section 103(a) as being unpatentable over Stevens in view of Grosset. Finally, Claims 1-12 are rejected under Section 103(a) as being unpatentable over Stevens, Shinmoto and Grosset. In response to the Section 103(a) rejections, the Applicants respectfully submit that Claims 1-12, as amended, are not obvious in view of Stevens, Shinmoto and Grosset. Reconsideration is respectfully submitted.

Claim 1, as amended, recites an extrusion die including an inner die portion having a male form. The male form has a male complex shape with peaks and a valley. An outer die portion has a female form. The female form has a female complex shape with peaks and a valley which corresponds to the male complex shape of the male form. The female complex shape surrounds and is separated from the male complex shape by a gap. Flowable material is capable of being extruded through the gap between the male and female complex shapes to form a hollow profile. An adjustment mechanism includes an outer member surrounding the outer die portion. At least eight adjustment screws are threaded through the outer member and engage the outer die portion at equidistant angular locations and configured to provide controlled incremental linear and rotational adjustment of the female complex shape relative to the male complex shape for adjusting the gap and for adjusting the position and orientation of the corresponding peaks and valleys of the male and female complex shapes relative to each other.

Claims 1 and 8 have been amended to recite "and configured to provide controlled incremental linear and rotational adjustment of the female complex shape relative to the male complex shape". Support for these amendments is found at least in FIG. 5, as well as on page 5,

line 22 through page 7, line 7 of the Specification as originally filed. No new matter is introduced.

In one illustrative embodiment of the present invention (FIGs. 1-5), the male 16a and female 22a forms of the inner 16 and outer 22 die portions both have multiple peaks and valleys or indented portions, for example, valleys at locations 25 and peaks at locations 27. Such forms are complex and in the prior art have been difficult to adjust. However, the gap 24 between the male form 16a and the female form 22a can be easily adjusted by the claimed adjustment mechanism so that a profile can be extruded through the gap 24 with the desired wall thickness characteristics.

The adjustment mechanism can have eight adjustment screws 20 which are configured to provide controlled incremental linear and rotational adjustment of the female complex shape relative to the male complex shape. In some embodiments, more than eight adjustment screws can be employed.

As an illustration, referring to FIG. 5, to make a controlled incremental linear adjustment of the position of the outer die portion 22 relative to the inner die portion 16, opposing adjustment screws 20 along axes X, Y, 40 and 42 can be loosened and tightened to move the outer die portion 22 in either direction along those four axes as shown by the arrows. For example, in order to move the outer die portion 22 incrementally towards position 7 or to the left, along the horizontal axis X, the adjustment screw 20 at position 7 can be loosened and the opposing adjustment screw 20 at position 3 can be tightened. The adjustment screws 20 and/or the outer die portion 22 at positions 6 and 8 can compress or deflect slightly to allow the incremental movement. The incremental movement is typically in the thousandths of an inch. Although the adjustment screws 20 at positions 1 and 5 along the vertical axis Y might possibly lose contact with the shifted outer die portion 22, as do those at positions 2 and 4, the contact of the adjustment screws 20 at position 3 and the 45° positions 6 and 8, can prevent unwanted rotation or vertical movement of the outer die portion 22 relative to the inner die portion 16 so that the movement toward position 7 is conducted along a straight path on axis X. In order to obtain further movement, the previously described process can be repeated. In addition, such controlled incremental linear movement can be also conducted along axis Y for vertical movement, or the axes 40 or 42 for 45° movement. If the ultimate desired direction of

movement is not directly on the axes X, Y, 40 or 42, then controlled sequential incremental movement of the outer die portion 22 can be conducted along combinations of more than one axis until the desired position is achieved.

The adjustment screws are configured to also provide controlled incremental rotational adjustment of the outer die portion by controlled sequential incremental movement along the appropriate axes and in the appropriate directions. The center point of such rotation can be varied.

By making controlled incremental linear and rotational adjustments, without unwanted rotation or movement, the position and orientation of the female complex shape can be adjusted relative to the male complex shape with precision so that the proper gap on all sides of the male complex shape can be made. In addition, the corresponding peaks and valleys of the male and female complex shapes can be properly positioned and oriented relative to each other. Prior systems have not been able to adequately adjust multiple peaks and valleys.

In contrast, Stevens discloses a simple extrusion die having a triangular inner male portion with only peaks (FIG. 7), a triangular outer female portion with only valleys, and a gap formed therebetween. Four centering screws 20 in opposed pairs (FIGs. 2 and 9) can adjust the outer female portion, making lateral adjustments in two linear x-y directions. The configuration of four centering screws 20 is not suitable for making controlled incremental rotational adjustments.

It would not be obvious to modify both inner and outer die portions of Stevens to include peaks and a valley, or to have at least eight adjustment screws configured as in the claimed invention, as suggested by the Examiner. The four adjustment screws in Stevens are suitable for adjusting the gap for the simple die portion shapes shown in Stevens where merely adjustments in the x-y directions are suitable for gap adjustment. Since Stevens does not teach or suggest that controlled incremental rotational adjustment can be obtained by at least eight screws in a particular configuration, there is no motivation to increase the cost and complexity of Stevens by arbitrarily adding four more adjustment screws. Furthermore, there is also no motivation to further increase the cost and complexity of Stevens by arbitrarily changing the simple die shapes in Stevens to male and female complex shapes, each having peaks and a valley, as claimed,

because adjusting the gap between the various peaks and valleys of such complex shapes becomes a problem.

In the present invention, the Applicants have found that at least eight adjustment screws can be configured to provide both controlled incremental linear adjustments and controlled incremental rotational or angular adjustments, which can allow easy alignment of male and female complex shapes each having peaks and a valley, as previously discussed. Consequently, Eskimo Pie Corp. v. Levous et al. and In re Harza are not relevant to the claimed invention.

Accordingly, Claims 1-12, as amended, are not obvious in view of Stevens since Stevens does not teach or suggest "an inner die portion having a male form, the male form having a male complex shape with peaks and a valley; an outer die portion having a female form, the female form having a female complex shape with peaks and a valley which corresponds to the male complex shape of the male form" and "at least eight adjustment screws threaded through the outer member and engaging the outer die portion at equidistant angular locations and configured to provide controlled incremental linear and rotational adjustment of the female complex shape relative to the male complex shape for adjusting the gap and for adjusting the position and orientation of the corresponding peaks and valleys of the male and female complex shapes relative to each other" as recited in base Claim 1, as amended, or "an inner die portion having a male form, the male form having a male complex shape with multiple peaks and valleys; an outer die portion having a female form, the female form having a female complex shape with multiple peaks and valleys which corresponds to the male complex shape of the male form" and "at least eight adjustment screws threaded through the retaining ring and engaging the outer die portion at equidistant angular locations and configured to provide controlled incremental linear and rotational adjustment of the female complex shape relative to the male complex shape for adjusting the gap and for adjusting the position and orientation of the corresponding peaks and valleys of the male and female complex shapes relative to each other", as recited in base Claim 8, as amended. Reconsideration is respectfully requested.

Shinmoto discloses in FIGs. 1 and 2 a die for extruding a film in an annular shape through an annular lip or gap 2a. About twenty (20) evenly spaced adjusting screws 2f extend through a lip adjusting ring 2e for evenly and radially adjusting the annular lip 2a every 18° over the entire diameter in order to obtain a film with consistent thickness around the diameter.

Shinmoto does not teach or suggest that the adjustment screws are configured to provide controlled incremental angular adjustments.

There is no motivation to combine Shinmoto with Stevens. Stevens has simple die shapes which can be suitably and relatively quickly adjusted with four screws. It would be an unnecessary expense and results in increased complexity to add sixteen (16) more adjusting screws for a total of twenty (20) screws to perform a function that is already accomplished with four screws. Having a total of twenty (20) screws would make adjustments more difficult, and lengthy to perform. Furthermore, Shinmoto does not teach or suggest that it is configured to provide controlled incremental rotational adjustments. Finally, there is no suggestion or motivation for Stevens or Shinmoto to have male and female complex shapes both with peaks and a valley, as recited in Claim 1, as amended.

Accordingly, Claims 1-12, as amended, are not obvious in view of Stevens and Shinmoto since neither reference, either alone or in combination, teach or suggest "an inner die portion having a male form, the male form having a male complex shape with peaks and a valley; an outer die portion having a female form, the female form having a female complex shape with peaks and a valley which corresponds to the male complex shape of the male form" and "at least eight adjustment screws threaded through the outer member and engaging the outer die portion at equidistant angular locations and configured to provide controlled incremental linear and rotational adjustment of the female complex shape relative to the male complex shape for adjusting the gap and for adjusting the position and orientation of the corresponding peaks and valleys of the male and female complex shapes relative to each other" as recited in base Claim 1, as amended, or "an inner die portion having a male form, the male form having a male complex shape with multiple peaks and valleys; an outer die portion having a female form, the female form having a female complex shape with multiple peaks and valleys which corresponds to the male complex shape of the male form" and "at least eight adjustment screws threaded through the retaining ring and engaging the outer die portion at equidistant angular locations and configured to provide controlled incremental linear and rotational adjustment of the female complex shape relative to the male complex shape for adjusting the gap and for adjusting the position and orientation of the corresponding peaks and valleys of the male and female complex shapes

relative to each other", as recited in base Claim 8, as amended. Reconsideration is respectfully requested.

Grosset discloses in FIGs. 1-4 an extrusion core 24 which is fitted along with a series of rings 32a, 32b, 32c and 34 to an internal hollow part 36, outer hollow part 38 and extrusion nozzle 44. The extrusion core and nozzle each have peaks and valleys, but there are no adjustment screws disclosed for making any adjustments. Presumably, the parts, when fitted together, provide the proper gap spacing.

The combination of Stevens with Grosset would not attain the claimed invention but would result in an extrusion die having complex male and female shapes with peaks and a valley but with only four adjustment screws. As discussed above, Stevens does not teach or suggest that at least eight adjustment screws can be configured to provide controlled incremental rotational adjustment. In addition, it would not be obvious or desirable to combine Shinmoto with Stevens and Grosset to add the 20 adjusting screws of Shinmoto since it increases costs and complexity, and makes the adjustment difficult, complicated and lengthy. Furthermore, Shinmoto does not teach or suggest that it is configured to provide controlled incremental rotational adjustment.

Accordingly, Claims 1-12, as amended, are not obvious in view of Stevens and Grosset, or in view of Stevens, Shinmoto and Grosset, since none of the references, either alone or in combination, teach or suggest "an inner die portion having a male form, the male form having a male complex shape with peaks and a valley; an outer die portion having a female form, the female form having a female complex shape with peaks and a valley which corresponds to the male complex shape of the male form" and "at least eight adjustment screws threaded through the outer member and engaging the outer die portion at equidistant angular locations and configured to provide controlled incremental linear and rotational adjustment of the female complex shape relative to the male complex shape for adjusting the gap and for adjusting the position and orientation of the corresponding peaks and valleys of the male and female complex shapes relative to each other" as recited in base Claim 1, as amended, or "an inner die portion having a male form, the male form having a male complex shape with multiple peaks and valleys; an outer die portion having a female form, the female form having a female complex shape with multiple peaks and valleys which corresponds to the male complex shape of the male form" and "at least

eight adjustment screws threaded through the retaining ring and engaging the outer die portion at equidistant angular locations and configured to provide controlled incremental linear and rotational adjustment of the female complex shape relative to the male complex shape for adjusting the gap and for adjusting the position and orientation of the corresponding peaks and valleys of the male and female complex shapes relative to each other", as recited in base Claim 8, as amended. Therefore, Claims 1-12, as amended, are now in condition for allowance. Reconsideration is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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